# Knowledge sharing in digital learning environments Moocs

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***Abstract*— In a context where the need for online training in Moroccan universities has become increasingly pressing and massive, the use of MOOCs (massive open online courses) has grown significantly since the democratization of digital technology. This growth has been further accentuated with the pandemic of the Coronavirus. However, despite their growing and expanding popularity, these courses still lack tools that allow teachers and researchers to guide and analyze finely the learning that takes place. This is especially true since the issues related to the circulation and sharing of knowledge, a new paradigm of knowledge in digital learning environments, are becoming central. However, the conceptual articulation that their cross-study requires is still in its infancy. In this work, we analyze the sharing of contents of the video capsules in the various constituent elements of the MOOC "communication of organizations". We are interested more particularly in mediation and the mediating trace. On the basis of learner traces, this study identified the connections between the different elements of the MOOC.**

**KEYWORDS— CONTENT SHARING, DIGITAL ENVIRONMENTS, MEDIATION, TRACE.**

## I. INTRODUCTION

With technological developments, learning environments, by their dynamic composition and variety, facilitate the circulation of knowledge and constitute a gigantic data production environment, generating a multitude of user traces. The question posed by Jacob [1]"(...) how does knowledge come to be a body and a place, to be shared in collectives, to organize territories, to circulate in networks? (...) ". Its circulation being allowed only by media supports [2]which allow to convey, to diffuse and to communicate the contents. We aim to understand how the trace can serve as an index of the circulation of knowledge in learning contexts, in order to understand the phenomena of dissemination and sharing of digitized content in these contexts. How do these phenomena relate to the elements of the MOOC? To shed light on these questions, we propose to study the circuits of content sharing in the Mooc.

To support our reflection, we present the traces collected during the pandemic period within an entirely remote MOOC platform titled 'Communication of Organizations'. This presentation forms part of our investigation into the role of traces in studying digital learning environments. We will specifically examine mediation and the trace as indicators of this knowledge circulation. An interrelationship between the elements of the MOOC emerges from the results of our exploratory study.

## II. THEORETICAL APPROACH

The Mooc is a digital environment that generates learning (vertically between teachers and participants, and horizontally between participants), and is characterized by a mutation in the relationship to knowledge[3]. We propose to organize this theoretical approach by putting forward the interest of apprehending the Mooc device in a systemic approach[4] [5]for the analysis of the sharing of contents in digital teaching-learning situations[6].

Also,to explore the pedagogical potential of the Mooc "communication of organizations", we mobilize the concept of mediation [7] which allows us to evaluate the circulation of knowledge in a situation where writing represents the highest category of symbolic mediators as specified by Kozulin[8] . And we focus on the production of traces in the structuring elements of the MOOC learning device. Traces of interaction and collective forms of action and mediation [8] are indices of the circulation of knowledge in digital environments.

In the digital learning environments Moocs, we believe that mediation can be human symbolic and material mediations[9]. In this research work we analyze the aspects of sharing content in this digital learning space the MOOC "communication of organizations", we are interested in the mediating trace [10]and its role in identifying the sharing of content from the capsules in the Mooc elements.

## III. PRESENTATION OF THE STUDIED DEVICE

The MOOC "communication of organizations" is a space of courses designed in 6 modules to be distributed online with deadlines spread over 6 weeks, at a rate of one module per week, intermediate quizzes and a global quiz at the end, recognition in case of success and interactions between participants, and between participants, teachers tutors. Schematically, the MOOC is hosted by a Mun Mooc platform. It is proposed by the Research Laboratory on Languages and Communication (Larlanco). It is free, open to all (massive). The MOOC is rewarded by a certificate of achievement, in the form of a free certificate subject to the completion of activities and participation in collaborative work. The MOOC structured in weeks of training, offers educational resources mainly videos (two per module), textual documents and educational resources associated with the themes that follow, a webography. In addition to these relatively traditional course materials, the MOOC offers an interactive tutored forum to support exchanges between learners and teachers. The

collaborative aspect is privileged for the validation of the MOOC in which learners are invited to interact to feed the proposed modules which is formalized in a pedagogical contract.

The massive open design of MOOCs and the structuring of courses into pedagogical activities on devices: actions performed by learners on videos (play, download, interrupt, etc.), activities on forums, glossary made available to participants, realization of intermediate quizzes, offer terabytes of data that can be collected. This is enough to make any researcher interested in quantitative approaches dizzy. Finally, as long as one has some basic notions about the management of massive data, it becomes possible, at little cost, to describe macro/meso social phenomena (the cultural), which qualitative approaches can then better interpret and also micro social phenomena (interaction and sharing).

The implementation of the six online modules is based on a learning scenario and a supervision scenario, both of which are predefined by the pedagogical team of university professors. These two scenarios are developed taking into account, among other things, the specificities of the training, the duration, the objectives, the prerequisites of the participants and their characteristics. They aim to guarantee the quality of the training and to promote the success of the learners.

## IV. METHOD OF ANALYSIS

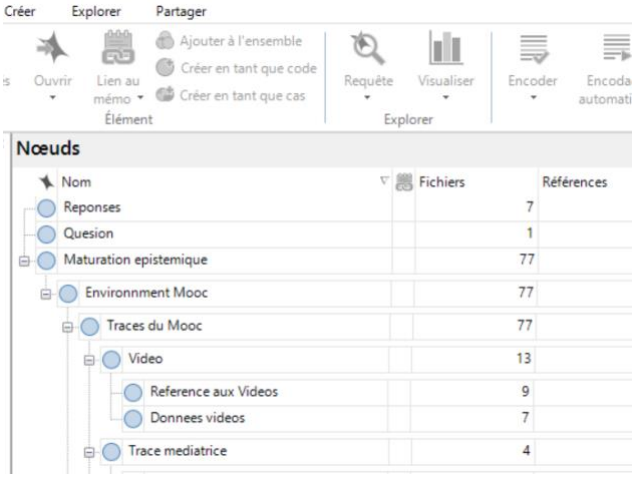
The device set up during the period of confinement is organized around the modules of "communication of the organizations" whose principal resources are the video capsules on the concepts of the various modules.

Our research object consists in identifying how the video traces can be an index of knowledge circulation in the elements of the Mooc, and can they also constitute a mediation system that generates activities likely to promote learning? This training situation is approached as a work situation mobilizing data from the traces of the activity (these traces are composed of the key words of the Mooc videos) from a quantitative point of view but also from a qualitative point of view. The population of the study was made up of the participants of the Mooc who used the forum and the glossary. We were careful to anonymize the messages and excerpts of the learners to be presented in order to protect their authors[11].By combining qualitative and quantitative methods, we propose to analyze the sharing of key concepts from the videos in the traces of the participants of the Mooc "communication of organizations". Among the different tools available for the exploration of the corpus, we selected the Nvivo software. This software is designed for the analysis of qualitative data such as texts, audio and video recordings. Text excerpts are coded into nodes, and extraction and compilation are then performed to analyze the entire data set. The software can also create a frequency list, word clouds, queries and condensed matrices of the texts that allow to explore the textual data from a global perspective. Each sentence was therefore coded according to the relevant category using this software (Figure 1).

As our data collection takes place in a learning situation requiring the mobilization of contents, from which we have manually collected the lexicon of the capsules: key words, for the analysis of the traces of interaction of the forum and the publications on glossary, we propose the traces of the key words as indices of circulation of knowledge. For this, we essentially mobilize the presence/absence of these traces from the capsules in the different elements of the Mooc.

## V. PRESENTATION AND ANALYSIS OF THE RESULTS

**FIGURE 1: SCREENSHOT OF THE NVIVO SOFTWARE**




The video capsules under study consist of 12 videos, each lasting 6 minutes. We have identified their keywords in the following table (Table 2).

| Key words of the videos | | | | |
|---|---|---|---|---|
| Actors | **behavior** | **external** | **internal** | **monochro nous** |
| act | **concept** | **direction** | **genesis** | **Leadership** |
| hypothermic needle | **content** | **discourse** | **group** | **managem ent** |
| analysis | **control** | **active listening** | **history of the madm an** | **manipulati on** |
| approach | **coordinati on** | **sender** | **holist** | **markers** |
| interior archaeology | **beliefs** | **empathy** | **identity** | **mass** |
| channel | **culture** | **company style** | **influence** | **medias** |
| changes | **decentrati on** | **issues** | **interaction** | **message** |
| Communication | **decision** | **environne ment** | **intercultural** | **model** |

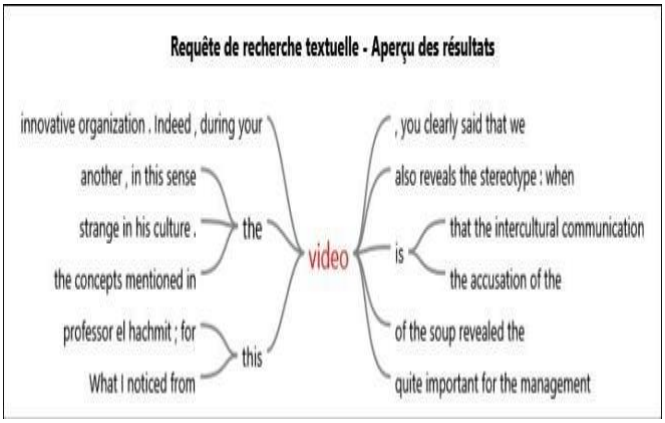
**Table 1: key words of the video capsules**

| Participants | Key words videos | discussion forum | Glossary |
|---|---|---|---|
| Aissaoui | 80 | 19 | 10 |
| Borhan | 80 | 27 | 30 |
| chabaicha | 80 | 26 | 9 |
| choukai | 80 | 24 | 10 |
| Dari | 80 | 52 | 12 |
| Majdouline | 80 | 25 | 22 |
| halima | 80 | 17 | 16 |
| Hasna | 80 | 9 | 5 |
| lamia | 80 | 16 | 4 |
| madida | 80 | 3 | 9 |
| sator | 80 | 22 | 6 |
| zahra | 80 | 11 | 14 |

**Table 2: Keyword circulation indices in the different elements of the Mooc**

First, we examined the sharing of content using the lexicon of the videos as an index of circulation. We referred to the presence of this lexicon in the learners' traces from a quantitative perspective by noting the occurrences of the terms and comparing them to the lexicon of the video capsule (Table 2).We found that the number of occurrences goes up to 65% in the forum and 37% in the glossary among the most active learners in the Mooc activities.
We are also interested in how the lexicon evolves and changes in the traces of these learners (Figure 2 and table 3). In this regard, we identified exchanges on the concepts discussed in the videos, for example: (I believe that one of the concepts mentioned in the video) and (Indeed, during your video, you clearly said that we can assimilate the said organization to the innovative structure) but also a work of reflection and interpretation of the content of the video, as indicated by statements such as (for my interpretation of the video).

**Figure 2: Text search query for the word video on Mooc**




| | references to videos |
|---|---|
| **Aissaoui 1** | **good evening, from the previous videos and the crazy story, it seems to me that two important elements need to be emphasized as toxic barriers to intercultural communication. In this sense the soup video revealed the conflicts that can result from all kinds of pre-judgement and misunderstanding.<br><br>for this rather important capsule for the management of an organisation.** |
| **Choukai1** | **Indeed, in your video, you clearly stated that the said organisation can be equated with the innovative structure** |
| **Dari1** | **What I noticed from this video is that intercultural communication did not take place between the two people, which is why the misunderstanding was triggered and gave rise to a whole conflict. The preconceived notions about people have blocked this communication and are an obstacle to intercomprehension.** |
| **layachi1** | **I believe that one of the concepts evoked in the video.** |

**Table 3: Condensed matrices extracts on the video**

A general analysis of the results shows that the exchanges relating to the contents of the capsules do not occupy a particularly prominent place, but it is not negligible.
As far as the learners' traces from the Mooc are concerned, although the results show that the learners reproduce the knowledge from the different capsules in an almost identical way, they do not limit themselves to the knowledge given to them. The learners resort to a partial mobilization of the knowledge and the most active have a mobilization towards more appropriation of these contents in particular by a work of rewriting of the contents of the capsules and a work of reflection on these contents. There is remobilization of the knowledge of the capsules for purposes of analysis and reflection essentially in the discussion forum. Moreover, if we can grasp that there is sharing of content through the mediated trace, this mediated trace is produced through the Mooc device that gave it its form. It materially organizes the communication [12]of knowledge to produce and disseminate it, these traces are influenced by the elements of the device through which they circulate. This mediation of traces highlighted in this Mooc initiates a new relationship to knowledge[13].

## VI. DISCUSSION

This exploratory research arouses particular interest in our reflections. The study presents an analysis of the "Organizational Communication" MOOC during the confinement period, which sparks particular interest in the reflection we are engaging in regarding traces[14]. The mediated trace, revealed through the dissemination of knowledge in video capsules and interactions between

instructors and learners, primarily on the MOOC forum, also highlights the importance of the link that mediation facilitates in connecting two disjointed worlds, especially when they are, as in this case, physically separated.

Symbolically, this research reveals a significant shift in the norms and rules from the traditional physical classroom setting towards a new relationship with knowledge in these constantly evolving digital environments. We are witnessing a transformation in how knowledge is transmitted and received, marking an evolution in how we interact with learning and knowledge.

Our approach to the circulation and sharing of knowledge within the MOOC, emphasizing learning traces, allows us to grasp the various ways in which knowledge transforms and modifies within the components of this platform. By understanding these transformations, we can better adapt our teaching and learning methods to meet the changing needs of learners in these new digital environments.

## VII. CONCLUSION

This study provides a valuable opportunity to deepen our understanding of the processes of knowledge sharing and circulation within digital learning environments in the Moroccan university context. By exploring these dynamics, we can better grasp how knowledge is exchanged, disseminated, and utilized in these constantly evolving educational settings.

By delving into the connections between different approaches to digital traces and knowledge mediation, we pave the way for new research perspectives. By examining more closely how digital traces can act as mediators to facilitate learning and knowledge sharing, we could identify effective strategies and practices to optimize digital learning environments.

As part of a series of studies on digital traces from the perspective of the humanities and social sciences, this study may also open avenues for research into mediated learning situations in other educational contexts and digital environments. For example, by comparing practices and learning outcomes in mediated learning across different platforms, specialties, as well as between countries or institutions, we could better understand the factors influencing the effectiveness of digital learning and identify transferable best practices.

Ultimately, this study initiates essential reflection on the processes of learning and knowledge sharing in digital environments within the Moroccan university context through traces, and it opens the door to numerous potentially innovative research perspectives. By continuing to explore these questions, we can significantly contribute to improving teaching and learning practices in an increasingly digital world.

### References

[1] C. Jacob, « Practical turn », in *Qu'est-ce qu'un lieu de savoir ?*, in Encyclopédie numérique. , Marseille: OpenEdition Press, 2014. doi: 10.4000/books.oep.653.

[2] B. Simonnot, « Médiations et agir informationnels à l'ère des technologies numériques », *Les Cahiers D Esquisse*, avr. 2014, Consulté le: 2 avril 2023. [En ligne]. Disponible sur: https://www.academia.edu/64276330/M%C3%A9diations_et_agir_informationnels_%C3%A0_l_%C3%A8re_des_technologies_num%C3%A9riques

[3] C. Pouliot, B. Bader, et G. Therriault, « The notion of the relationship to knowledge: A theoretical tool for research in science education », *International Journal of Environmental and Science Education*, vol. 5, janv. 2010.

[4] M. Trestini, « Théorie des systèmes complexes appliquée à la modélisation d'environnements numériques d'apprentissage de nouvelle génération », p. 253.

[5] A. Canizares et C. Gardiès, « Rôle de l'information-documentation dans l'étude de la circulation des savoirs en contexte éducatif », *Études de communication*, vol. 57, nº 2, p. 19-38, 2021, doi: 10.4000/edc.13045.

[6] V. Couzinet, « Dispositifs documentaires : strates de médiations et circulation des connaissances », *Sciences de la société*, nº 107, Art. nº 107, août 2021, doi: 10.4000/sds.13010.

[7] C. Brassard et P. Teutsch, « Proposition de critères de proximité pour l'analyse des dispositifs de formation médiatisée », *Distances et médiations des savoirs. Distance and Mediation of Knowledge*, vol. 2, nº 5, Art. nº 5, févr. 2014, doi: 10.4000/dms.646.

[8] C. Gardiès et I. Fabre, « Médiation des savoirs : de la diffusion d'informations numériques à la construction de connaissances, le cas d'une « classe inversée » », *dms*, vol. 3, nº 12, déc. 2015, doi: 10.4000/dms.1240.

[9] A. Canizares et C. Gardiès, « Approche systémique des concepts de médiation, de médiatisation et de dispositif : la circulation des sa- voirs à l'œuvre dans une classe inversée en informa- tion-documentation », p. 20, 2020.

[10] Y. Jeanneret, « Complexité de la notion de trace : De la traque au tracé », in *L'Homme trace : Perspectives anthropologiques des traces contemporaines*, B. Galinon-Melenec, Éd., in Sociologie. , Paris: CNRS Éditions, 2019, p. 59-86. Consulté le: 26 juillet 2021. [En ligne]. Disponible sur: http://books.openedition.org/editionscnrs/16683

[11] M. Marcoccia, « L'analyse conversationnelle des forums de discussion : questionnements méthodologiques », *Les Carnets du Cediscor. Publication du Centre de recherches sur la didacticité des discours ordinaires*, nº 8, p. 23-37, nov. 2004, doi: 10.4000/cediscor.220.

[12] J.-F. Tétu, « Yves Jeanneret, Critique de la trivialité. Les médiations de la communication, enjeu de pouvoir: Paris, Éd. Non Standard, 2014, 784 pages », *questionsdecommunication*, nº 26, p. 342-345, déc. 2014, doi: 10.4000/questionsdecommunication.9384.

[13] V. Melin, « Rapport au savoir », in *Vocabulaire des histoires de vie et de la recherche biographique*, in Questions de société. , Toulouse: Érès, 2019, p. 130-133. Consulté le: 17 septembre 2022. [En ligne]. Disponible sur: https://www.cairn.info/vocabulaire-des-histoires-de-vie-et-de-la-recherch--9782749265018-p-130.htm

[14] S. Agostinelli, « Comment penser la médiation inscrite dans les outils et leurs dispositifs ?Une approche par le système artefactuel », *Distances et savoirs*, vol. 7, nº 3, p. 355-376, 2009, Consulté le: 7 avril 2023. [En ligne]. Disponible sur: https://www.cairn.info/revue-distances-et-savoirs-2009-3-page-355.htm